



<400> 2

gatccaacaa agaaacgaca ccgaacaaac cttaag

36

<210> 3

<211> 101

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Flanking  
sequence of Measles HA gene insert for HN-L  
junction

<400> 3

aggcctaaaa gggaaatata aaaaacttag gagtaaagtt acgcaatcca actctactca 60  
tataattgag gaaggaccca atagacaaat ccaaattcga g 101

<210> 4

<211> 79

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Flanking  
sequence of Measles HA gene insert for HN-L  
junction.

<400> 4

tcataattaa ccataatatg catcaatcta tctataatac aagtatatga taagtaatca 60  
gcaatcagac aataggcct 79

<210> 5

<211> 64

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Cloning site  
for GU insertion

<400> 5

aggaaaaggg aaatataaaa aacttaggag taaagttacg cgtgttaact tcgaagagct 60  
ccct 64

[illegible]

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<400> 6
aggaaaaaggg aacgcgtggt aacttcgaag agctccct      38
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<400> 7
ttaacaatat acaaataaga aaaacttagg attaaagagc catggcgtac gaagcttacg 60
cgt                                                    63
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<220>  
<223> Description of Artificial Sequence: PIV3 gene end  
(GE) sequence

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<400> 8
aagtaagaaa aa 12
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<220>

<223> Description of Artificial Sequence: Cloning site  
for RSV G and F gene inserts in B/H PIV3

<400> 9

aggattaaag aactttaccg aaaggtaagg ggaaagaaat cctaagagct tagcgatg 58

<210> 10

<211> 11

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Flanking  
sequence for RSV G gene insert in B/H PIV3

<400> 10

gcttagcgat g 11

<210> 11

<211> 15

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Flanking  
sequence of RSV G and F gene inserts in B/H PIV3

<400> 11

aagctagcgc ttagc 15

<210> 12

<211> 24

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Flanking  
sequence for RSV F gene insert in B/H PIV3

<400> 12

gcttagcaaa aagctagcac aatg 24

<210> 13

<211> 83

<212> DNA  
<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Forward primer  
for PCR of measles HA gene insert for N-P and P-M  
junctions

<400> 13

ttaatcttaa gaatatacaa ataagaaaaa ctaggatta aagagcgatg tcaccacaac 60  
gagaccgat aaatgccttc tac 83

<210> 14

<211> 67

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Reverse primer  
for PCR of measles HA gene insert for N-P and P-M  
junctions

<400> 14

attattgctt aaggtttgtt cggtgtcgtt tctttgttg atcctatctg cgattgggtc 60  
catcttc 67

<210> 15

<211> 55

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Forward primer  
for PCR of measles HA gene insert for HN-L  
junction

<400> 15

gacaataggc ctaaaaggga aatataaaaa acttaggagt aaagttacgc aatcc 55

<210> 16

<211> 68

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:  
Reverse/Forward primer for PCR of measles HA gene  
insert for HN-L junction

<400> 16

gtagaacgcg tttatccggt ctcgttgtgg tgacatctcg aatttggatt tgtctattgg 60  
gtccttcc 68

<210> 17

<211> 28

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Reverse primer  
for PCR of measles HA gene insert for HN-L  
junction

<400> 17

ccatgtaatt gaatccccca acactagc 28

<210> 18

<211> 28

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:  
Forward/Reverse primer for PCR of measles HA gene  
insert for HN-L junction

<400> 18

cggataaacg cggttctacaa agataacc 28

<210> 19

<211> 23

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Upstream HPIV2  
HN primer

<400> 19

gggccatgga agattacagc aat 23



# 2025

26

<213> Artificial Sequence

<223> Description of Artificial Sequence: HPIV1 HN primer

24

<213> Artificial Sequence

<223> Description of Artificial Sequence: Oligomer  
insert for rule-of-six conformity

13

<213> Artificial Sequence

<223> Description of Artificial Sequence: Oligomer  
insert for rule-of-six conformity

14

<212> DNA



<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Oligomer  
insert for rule-of-six conformity

<400> 27

cgcgaggcct ccgcg

15

<210> 28

<211> 16

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Oligomer  
insert for rule-of-six conformity

<400> 28

cgcgccgcgg aggcct

16

<210> 29

<211> 17

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Oligomer  
insert for rule-of-six conformity

<400> 29

cgcgcccgcg gaggcct

17

<210> 30

<211> 42

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Forward primer  
for RSV A G gene insert

<400> 30

aattcgctta gcgatgtcca aaaacaagga ccaacgcacc gc

42

<210> 31  
<211> 92  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Reverse primer  
for RSV A G gene insert

<400> 31  
aaaaagctaa gcgctagcct ttaatcctaa gtttttctta ctttttttac tactggcgtg 60  
gtgtgttggg tggagatgaa ggttgtgatg gg 92

<210> 32  
<211> 65  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Forward primer  
for RSV A F gene insert

<400> 32  
aaaggcctgc ttagcaaaaa gctagcacia tggagttgct aatcctcaaa gcaaatacaa 60  
ttacc 65

<210> 33  
<211> 89  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Reverse primer  
for RSV A G gene insert

<400> 33  
aaaagctaag cgctagcttc ttaataccta agtttttctt acttttatta gttactaaat 60  
gcaatattat ttataccact cagttgatc 89

<210> 34  
<211> 44  
<212> DNA  
<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Mutagenic  
forward primer for modification of rHPIV3-1 cDNA

<400> 34

cggccgtgac gcgtctccgc accggtgtat taagccgaag caaa

44

<210> 35

<211> 59

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Mutagenic  
reverse primer for modification of rHPIV3-1 cDNA

<400> 35

cccagacacg ctttgctcct aagtttttta tatttcccg acgtctattg tctgattgc 59

<210> 36

<211> 95

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Forward primer  
for insertion of HPIV2 F ORF into rB/HPIV3 genome

<400> 36

aaaatatagc ggccgcaagt aagaaaaact taggattaaa ggcggatgga tcacctgcat 60  
ccaatgatag tatgcatttt tgttatgtac actgg 95

<210> 37

<211> 72

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Reverse primer  
for insertion of HPIV2 F ORF into rB/HPIV3 genome

<400> 37

aaaatatagc ggccgctttt actaagatat cccatatatg tttccatgat tgttcttgga 60  
aaagacggca gg 72

<210> 38  
<211> 81  
<212> DNA  
<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Forward primer  
for insertion of HPIV2 HN ORF into rB/HPIV3 genome

<400> 38

ggaaaggcgc gccaaaagtaa gaaaaactta ggattaaagg cggatggaag attacagcaa 60  
tctatctctt aaatcaattc c 81

<210> 39  
<211> 54  
<212> DNA  
<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Reverse primer  
for insertion of HPIV2 HN ORF into rB/HPIV3 genome

<400> 39

ggaaaggcgc gccaaaatta aagcattagt tcccttaaaa atggtattat ttgg 54

<210> 40  
<211> 25  
<212> DNA  
<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Primer for  
construction of PIV3-2 chimeric cDNAs, PIV2 F  
(sense)

<400> 40

gtaccatgga tcacctgcat ccaat 25

<210> 41  
<211> 31  
<212> DNA  
<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Primer for  
construction of PIV3-2 chimeric cDNAs, PIV2 F  
(antisense)

<400> 41

tgtggatcct aagatatccc atatatgttt c

31

<210> 42

<211> 20

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Primer for  
construction of PIV3-2 chimeric cDNAs, PIV2 F  
(sense)

<400> 42

atgcatcacc tgcattcaat

20

<210> 43

<211> 22

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Primer for  
construction of PIV3-2 chimeric cDNAs, PIV2  
(antisense)

<400> 43

tagtgaataa agtgtcttgg ct

22

<210> 44

<211> 24

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Primer for  
construction of PIV3-2 chimeric cDNAs, PIV2 HN  
(sense)

<400> 44

catgagataa ttcattctga tggt

24

<210> 45  
<211> 24  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Primer for  
construction of PIV3-2 chimeric cDNAs, PIV2 HN  
(antisense)

<400> 45  
agcttaaagc attagttccc ttaa

24

<210> 46  
<211> 28  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Primer for  
construction of PIV3-2 chimeric cDNAs, PIV3 F  
(sense)

<400> 46  
atcataatta ttttgataat gatcatta

28

<210> 47  
<211> 19  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Primer for  
construction of PIV3-2 chimeric cDNAs, PIV3 F  
(antisense)

<400> 47  
gttcagtgct tgttgtgtt

19

<210> 48  
<211> 27  
<212> DNA  
<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Primer for construction of PIV3-2 chimeric cDNAs, PIV3 HN (sense/antisense)

<400> 48

tcataattaa ccataatatg catcaat

27

<210> 49

<211> 24

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Primer for construction of PIV3-2 chimeric cDNAs, PIV3 HN (sense)

<400> 49

gatggaatta attagcacta tgat

24

<210> 50

<211> 20

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Primer for construction of PIV3-2 chimeric cDNAs, PIV2 F (antisense)

<400> 50

atgcatcacc tgcaccaat

20

<210> 51

<211> 19

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Primer for construction of PIV3-2 chimeric cDNAs, PIV2 F (sense)

<400> 51  
gatgatgtag gcaatcagc 19

<210> 52  
<211> 18  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Primer for  
construction of PIV3-2 chimeric cDNAs, PIV2 HN  
(sense)

<400> 52  
actgccacaa ttcttggc 18

<210> 53  
<211> 26  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Primer for  
construction of PIV3-2 chimeric cDNAs, PIV2 HN  
(antisense)

<400> 53  
ttaaagcatt agttccctta aaaatg 26

<210> 54  
<211> 23  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Primer for  
construction of PIV3-2 chimeric cDNAs, PIV3 F  
(sense)

<400> 54  
aagtattaca gaattcaaaa gag 23

<210> 55  
<211> 20



<212> DNA  
<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Primer for construction of PIV3-2 chimeric cDNAs, PIV3 HN (antisense)

<400> 55

cttattagtg agcttggtgc

20

<210> 56

<211> 20

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Primer for construction of PIV3-2 chimeric cDNAs, PIV2 F (sense)

<400> 56

accgcagctg tagcaatagt

20

<210> 57

<211> 21

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Primer for construction of PIV3-2 chimeric cDNAs, PIV2 HN (antisense)

<400> 57

gattccatca cttaggtaaa t

21

<210> 58

<211> 22

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Primer for construction of PIV3-2 chimeric cDNAs, PIV3 M

(sense)

<400> 58

gatactatcc taatattatt gc

22

<210> 59

<211> 20

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Primer for  
construction of PIV3-2 chimeric cDNAs, PIV3 L  
(antisense)

<400> 59

gctaattttg atagcacatt

20

<210> 60

<211> 15492

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Sequence of  
pFLC.PIV32, 15492 bp in sense orientation

<400> 60

accaaacaag agaagaaact tgtctgggaa tataaattta acttttaaatt aacttaggat 60  
taaagacatt gactagaagg tcaagaaaag ggaactctat aatttcaaaa atgttgagcc 120  
tatttgatac atttaatgca cgtaggcaag aaaacataac aaaatcagcc ggtggagcta 180  
tcattcctgg acagaaaaat actgtctcta tattcgccct tggaccgaca ataactgatg 240  
ataatgagaa aatgacatta gctcttctat ttctatctca ttcactagat aatgagaaac 300  
aacatgcaca aagggcaggg ttcttggtgt ctttattgtc aatggcttat gccaatccag 360  
agctctacct aacaacaaat ggaagtaatg cagatgtcaa gtatgtcata tacatgattg 420  
agaaagatct aaaacggcaa aagtatggag gatttgtggt taagacgaga gagatgatat 480  
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caaattttac	actagatagt	ctcaaaattt	taacaccggg	agctacatca	acaaatttat	12540
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ctcttgtttg gt

15492

<210> 61

<211> 15498

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Sequence of  
pFLC.PIV32TM, 15498 bp in sense orientation

<400> 61

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